THE

BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. XVIII.] WEDNESDAY, MAY 16, 1838. [NO. 15.

VARIETIES, OR ANOMALOUS DISEASES (CONCLUDED).

To the Editor of the Boston Medical and Surgical Journal.

SIR,—"In order fully to investigate any subject with advantage," says the worthy Dr. Abernethy, "a great deal of collateral knowledge is required, which serves, like light shining from various places, to illuminate the object of our researches." I can never assure myself that any effort of mine will throw light on the subject or object of *tumors*, since it has been treated by the ability of an Abernethy, a Baillie, and a Warren; and yet I feel constrained to throw my little mite into the common stock of *varieties*, with the fond hope that, if it does no more, it will induce some one to do the same. In calling two or three diseases *anomalous*, I only mean to signify that such is their character, as at present advised by the symptoms and the final result. In regard to the *first case* (see last week's Journal), we should be inclined to pronounce it a case of *phlebitis*, were it not for the peculiar symptoms attending it. We do hope, at least, that it will elicit inquiry on the part of some of your able correspondents. The *third case*, which is also sent you, is one of a different description, being a case of *rabid appetite* and *rapid emaciation*, but at present hopefully recovering.

CASE 2. "Some time in September, 1837, I was called to see Mrs. I., and on examination I ascertained that, about three weeks previous, she had been attacked with pain in the vicinity of the left kidney and spleen. As the pain continued for several days, with little or no abatement, and her husband became solicitous of medical aid, the family physician (Dr. C.) was called; who, being at a loss for the locality of the disease, believed that it proceeded from a local affection, which had occasioned fever, and a disturbance of the system. He determined, however, upon a general antiphlogistic course. He bled, cupped, and directed a cathartic of sulphate of magnesia every other morning. On two subsequent visits, the bleeding and cupping were repeated, which, with fomentations to the affected side, and a solution of sulphate of morphine to alleviate pain and procure sleep, constituted the principal features of the treatment. Circumstances made it necessary for the attending physician to leave the neighborhood, and in a day or two I was called again. I found her laboring under great prostration, excruciating pain, and, to all appearance, hectic fever. The course of depletion had evidently been pushed far enough, but every means had as yet proved ineffectual. I advised the application of a blister, and a contin-

uance of the sulphate of morphine, and also some gentle cathartic, when the bowels required it. On my next visit (three days after), I understood that the blister had given some relief; but from a recurrence of the pain, I was induced to think that the apparent improvement was not likely to be permanent. A *tumor* had made its appearance in her side, and upon pressure pain was felt, leading to the suspicion that an *abscess* was about to be formed. Fully impressed with this belief, and that when formed, it would point and break externally, I directed a poultice of chamomile, and, in other respects, the same treatment to be continued. Two days subsequently to this visit, I was called in haste, and informed that the 'tumor had bursted,' and was discharging immense quantities of pus by *the mouth*, and had almost produced suffocation. When I arrived the tumor had not entirely subsided, but was so reduced in size, as to be scarcely perceptible. She labored under incessant coughing, and large quantities of pus continued to be expectorated. In a few days the cough ceased, the pain departed, and every unfavorable symptom disappeared. Mrs. I. is now well, having neither pulmonary nor any disease of the chest. It may not be amiss to state that on my second visit, when I first discovered an enlargement of the side, Mrs. I. had a slight cough, which she attributed to a cold contracted a day or two before, whilst lying under a window exposed to a draught of air, but which she did not consider worthy of attention. But up to this period, there was neither pain, cough, nor any other symptom that would warrant a belief in there being any disease of the chest.

"This case, to the practitioner of medicine, is deemed to be interesting in several points of view. In the first instance, it was difficult, if not impossible, to arrive at any correct conclusion as to the *diagnosis* of the disease. The pain had assumed a position between the spleen and kidney of the left side, which must of necessity have involved us in doubt as to its *locality*; and the healthy performance of the abdominal functions seemed to embarrass the physician still more, and prevent a decision upon the true character of the disease. We are disposed now to ask, by what *channel* could the contents of the *tumor in the side* be exhibited *ab ore*? A suggestion has been offered (and from no inferior authority), that the *abscess was formed in the lungs, and the tumor created mainly by the pressure of the abscess downward*. Let it be as it may, we have felt anxious to call the attention of the faculty to the case, and we have ventured to call the case an *anomalous one*."

The plan I proposed some time since in reference to vegetable productions having medical properties, and found in the numerous counties of Virginia, can only be effected by me in a slight and scattering way; but I could sincerely hope to see it done by some one possessed of more leisure and perseverance, and more ample means of examining the different portions of the Commonwealth. In this county (Westmoreland) there are two sorts of excellent *snakeroot*, an abundance of *common mallow* (malva sylvestris), and also of *pleurisy root* (asclepias tuberosa). In regard to the *balm of Gilead*, mentioned in my last communication, it is said "never to be obtained genuine in Europe," and this may be admitted;

but as to the *balm of balsam tree* (amyris Gileadensis), that grows and flourishes in this region (though not abundant). We are of the opinion that "the signs of goodness are not fallacious." Indeed we have testimony to its efficacy in several cases. H. F.

Westmoreland Co., Va., April 14th, 1838.

The following brief sketch of the *third case* I promised, is in sum and substance as I received it from a truly estimable young physician of *Hanover*, formerly of *Westmoreland* and *Essex*.

A colored girl, about 14, living in Essex Co. (a part of which lies athwart the Rappahannock, opposite Westmoreland), came under my care some time in 1837. She was below the ordinary size, naturally lean and delicate, and always noticeable for the keenness of her appetite. She had been affected quite early with incontinence of urine; but on becoming diseased at the time I was called to see her, her appetite became so rabid that she would actually devour pecks of green fruit, and even *dead* rats and chickens; and such a secretion of urine took place that she was known to discharge gallons in the night season, and a great quantity in the day time. There was also a discharge of great quantities of feculent and undigested matter. The principal features of the treatment which I adopted, consisted in the use of the blue pill; iodine, in a decoction of sarsaparilla; the warm bath, and tartar emetic applied to the abdomen to remove the scurf. But notwithstanding, she rapidly became emaciated, and was soon reduced to a complete skeleton. At the same time, she had strength enough to help herself up, and even walk about the room. Ulcers appeared about the gluteal muscles, and a whitlow prevailed to the destruction of a portion of the *bone*, and yet she seemed to experience little or no pain therefrom. Her feet at times became œdematous, and her color changed from a *reddish* to a *whitish* hue. Her pulse was weak, though pretty regular. I have concluded, since the treatment, that she was affected with a real *diabetes*; but how this could prevail in its proper character and tendency, in common with the other symptoms, appeared mysterious. Were the kidneys, mesentery, or any other organ, more particularly affected? In a word, what was the proper seat of the disease? Is the conjecture well founded that the stomach had become displaced, assuming a perpendicular position, so that the ingesta passed on without digestion? How could nutrition be so completely destroyed, and the girl live? At present she is gaining, but tardily. This case is submitted (with too much brevity, perhaps), with the hope expressed in the preceding cases, that some able correspondent of yours will take it up and give us a better *diagnosis* than we possess. H. F.

CASE OF ACUTE HEPATITIS.

To the Editor of the Boston Medical and Surgical Journal.

Sir,—In pursuing medical science, we ought to view the past, the present, and, as far as possible, the future. In considering the *past*, I recog-

nize an unknown writer in your Volume VI. No. 15, article 1, on Morbi Epidemica, who has spoken so well, that I should like to hear from him again. His remarks are fraught with sound sense, and so full of practical excellence, that he does the public injustice by withholding his pen. These remarks are made, however, as an extrinsic matter, and not as having any very particular bearing upon the case in hand. They are indeed designed chiefly as a tribute of approbation to the article referred to, as an incitement to your readers to *re*-peruse it with attention, and as a meed of homage to a writer entirely unknown to me, even by name.

The following case occurred so long ago as October, 1827. It would probably have been offered for your Journal before, had not my notes of it been mislaid.

Dr. Daniel Hutchinson, late of Lebanon, Ct., was a corpulent man, of large frame, light complexion, weighing upwards of 220 lbs., and extremely hypochondriacal, insomuch that from hypochondriasis alone he occasionally, for years before his death, refused practice, and confined himself to his house. And then, again, he would resume his professional business with ardor and adequate application. In some of his *confinements*, the present writer was consulted, and has seen him undergo the *douche*, or cold bucketing. This was a remedy resorted to for weak nerves, flaccid muscles, and low spirits; but whether by his own prescription, or by some of his other medical advisers, is unknown, at least to me. Suffice it to say, that it was not by my advice. Besides *himself* and *myself*, he had various other medical advisers, prescribers, and phlebotomists. Nor do I recollect ever having bled him, until I was unexpectedly called to him in his last sickness. This was in October. In the July preceding, he had what was supposed to be an inflammation of the kidneys. For more than a month he had a pain in the nephritic region, for which he was bled *twelve times*, and took various antiphlogistic remedies, as well as some that were adapted to the cure of *nephritic calculi*. He so far recovered as to regain strength and appetite, and rode out several times. He had, in this illness, never apparently lost flesh, nor become in the least emaciated, although he lost about a dozen pounds in his weight. This was, perhaps, about the amount lost in blood by the *twelve* bleedings.

Matters were thus situated, when, on October 9th, he left his sick-room, at night, for his usual lodging apartment. After eating his breakfast, next day, he was seized about 9 or 10 o'clock with a most violent pain in the region of the liver. At about 1 o'clock, P. M., on that day, I was summoned to visit him, during a great fall of rain. I found the doctor lying on his bed, in extreme pain. I examined the pained spot by slightly pressing the hepatic region, which was somewhat tender to the touch, and to which the pain was confined. I counted his pulse before prescribing anything, and found it at 90 in a minute. It was so full that bloodletting seemed urgently indicated. Still, taking into consideration the number of times that he had been bled, within the last two or three months, I hesitated in resorting to the lancet. He had taken some anodyne medicine before my arrival, and to this I added a

full dose of laudanum, say 50 drops, with a teaspoonful of vitriolic ether. Waiting its effects, he grew no easier, and, with his approbation, I then drew twelve ounces of blood from his arm. This mitigated the pain; after which I staid with him nearly an hour, when he expressed his sense of relief, and remarked to me that I had *hit his case.* Upon my taking leave, he desired me to visit him again next day. But I had left him scarcely an hour, when I was desired to see him again, the pain having returned with great violence. I may here remark that the blood drawn upon my first visit was *buffy*, as it is commonly termed, although, when the inflammatory surface or crust is of a *pigeon* color, as in the present instance, this term is not a very appropriate one. The doctor now remarked, that he did not like the pigeon-colored *buff*, which, as he said, was half an inch thick on the blood I had drawn, and that he must be bled again. I applied a ligature to the same arm, and from the same orifice let the blood flow to about 14 ounces. This second bleeding did not mitigate the pain. The blood drawn did not exhibit so high a degree of inflammation as the first. He was faint at its stoppage.

About sunset, his son, a student of medicine, and the professional gentleman with whom he was studying, arrived. A cathartic course was now resorted to. Calomel, senna, salts, croton oil, castor oil, and injections, were fully tried; but all without effect. Nothing could be made to move the contents of the alvine canal. The enemata came away without fetor. At my first visit I inquired whether the pain shot upwards to the shoulder, and the doctor said that it did not; but on my second visit he informed me that this was the case. It afterwards darted downwards and across the stomach. But its seat was where it first began, i. e. upon the liver, over which a large epispastic was now applied. A pill of three grains of opium was given during the night; and the next morning, upon the arrival of another of the profession, the full opium course was decided on, and carried into effect. As there was at no time any febrile heat, there could be no possible objection to the most decided opium treatment.

The doctor's countenance now became pale, his features became sunken, and his eyes lacked energy. His thighs presented a mottled or marbled appearance. He had what is termed a *boking*, a kind of half vomiting, or throwing up of liquid, watery, and dark-colored matters, without a real retching. Diffusible stimulants were given, and sinapisms extensively applied to the surface. Ether, brandy, and tinct. lytta, were administered. But the large doses of opium failed of procuring sleep, and the stimulants of producing action. He sank rapidly, and at about 1 o'clock, 24 hours after my having been first called, he expired.

Post-Mortem Inspection.—The body was examined in my presence, about 40 hours after death. The late Dr. Wistar, whose lectures I attended, used to impress upon his class the great importance of paying strict attention to the state of the abdominal viscera—teaching them that *there* they were to look for those phenomena which led to the cause and to the seat of most diseases and deaths. And truly it is here that we find a great difference in the natural appearances of different subjects.

In some the stomach has little else to designate it, as to size, than the beginning of the intestinal canal; whilst in others, a large bagpipe-shaped sac presents itself, so different in size and form as to almost teach the beholder that he is not inspecting a human body. The latter was the case in this instance; but there was nothing morbid, nothing unhealthy, perceived until the region of the liver was examined. The appearance of this viscus was to me unique and anomalous. It was *large*, but not *enlarged*, for the subject was large. But on the convex surface of the great lobe, next the external integuments, there was a *scathed* spot, if it may be so termed, nearly as large as the top of a small tea-saucer. This spot was *depressed*, *wrinkled*, and *cracked*. It had, at first view, somewhat the complexion of having been *parboiled*.

Had Dr. H. been killed by a stroke of lightning received horizontally on the right side, this spot on the liver, with its wrinkles and fissures, would have fully answered to my ideas of such a catastrophe. There was a considerable effusion of serous matters into the abdomen about the region of the liver, and among the intestines near it. The cracks and fissures, on the *scathed* spot, were apparently very recent. The whole of the liver was yellowish on its external surface, as though its membrane had received the whole of the bile from the gall-bladder, and that thus it had been *inflamed* from *bile* instead of *blood*. This theory was corroborated by the gall-bladder being found empty, and by two gall-stones having been found within its cavity, which might have choked the common duct. They were of a conical shape, at top round, but flat at bottom, a little larger than the largest green peas, and perfectly smooth, as though polished by attrition. They were not impacted in the duct, but loose in the cyst. The color of these stones was black. The bloodvessels, seated in the concave part of the liver, were turgid with black blood; and I have an impression that there was some extravasated blood, proceeding from them, seen externally.

The intestinal canal appeared healthy and pervious. The impossibility of producing *catharsis* must, therefore, have been either from paralysis of the primary passages, destroying the peristaltic motion, or from the bile having been turned out of its natural course, or from both. The colon was large, fat, and, as its name denotes, *empty*. One or more little knots, or ganglia, were observed on the external surface of the stomach, but too few and small to produce any bad effect. They were such as are seen on the stomachs of fat and healthy slaughtered animals.

As the seat of the disease was found to exist in the liver, little attention was paid to other parts of the body, and it was with regret to me that the dissection was closed without examining the kidneys, whose presumed state of disease had been treated by a *dozen bleedings*. There was one appearance on the stomach which resembled a small blister or vesication. It was remote from the liver, however, and void of redness. The liver itself, compared with the other viscera, was rather small than large, and there were no signs of chronic disease. Nothing, indeed, morbid about it could be dated beyond the last sickness, except the gall-stones. The yellowness of the liver, the depressed

or *scathed* spot, the fissures in this spot, one of which seemed to pervade the substance of the liver the eighth of an inch, all bore the appearance of a recent origin. There was an engorgement of the blood-vessels on the concave or under part of it, in which the blood had a black and grumous appearance. In my previous notes, I attributed this appearance to the body's lying on the back, which is well known sometimes to produce this effect. Now what we have termed the *scathed spot* on the convex part of the liver, might have been an elevation at first, from inflammation or effusion, and the depression, or sinking, may have been occasioned by the position of the body. Still there must have been violent action in the part to account for the appearances. This spot somewhat resembled the external surface over it, which was vesicated by a blistering plaster, but which did not fill. The cause of the pain must be referred to a tremendous action and determination to this diseased spot. It could not have been owing to the gall-stones, which were found, not obstructing the duct, but lying loose in the fundus of the gall-bladder. Still it *is possible* that they may have fallen back after death.

The most violent spasms do not leave any marks of disease behind. Even hooping cough, which was so severe as to cause the death of a child, whose body was opened by Dr. Wistar, did not leave any traces of the mischief on any part of the body. Hence the consequences demonstrable must be referred to inflammation, obstruction, effusion, swelling, emphysema, or gangrene, in *most* or *all post-mortem* inspections. As to gangrene, there were no internal signs of it in the body of Dr. H. There was, however, a very considerable lividity about the neck, shoulders, and upper lip.

The stomach and alimentary canal were large, and the arch of the colon higher up than I had ever before observed. The gall-bladder was small, compared with every other viscus, and, what was singular, all the way of a bigness, from fundus to neck. The doctor was unable to lie on his back, from the first attack to near the closing scene, without a great increase of pain. As to his mode of life, he lived well, but not intemperately. He died at the age of sixty. As mental emotions have a known effect in producing and exacerbating hepatic complaints, my inquiries were directed to this point. But there did not appear to have been any unusual excitement to which his attack could be referred.

[We are compelled, by want of room, to reserve Dr. Comstock's "remarks" on this case, for another number.—Ed.]

ON THE RELATION BETWEEN THE RESPIRATORY AND CIRCULATING FUNCTIONS.

BY CHARLES HOOKER, M.D., OF NEW HAVEN, CONN.

[Communicated for the Boston Medical and Surgical Journal.]

The general relation between the respiratory and circulating functions has long been known. It is unquestioned that the main office of the

lungs is to effect that change in the blood which constitutes the difference between venous and arterial blood; and that the sole office of the right side of the heart is to transmit the blood to the lungs for the purpose of this change. This process has been called *oxygenation*, *decarbonization*, &c., according to different theories by which it is explained; also *arterialization*, a term implying no theory, but simply the fact that the blood is thus prepared for circulation through the arteries; and *aeration*, which simply implies that this change is effected by an exposure of the blood to air in the lungs.

RELATIVE FREQUENCY OF THE RESPIRATION AND THE PULSE.

From what is known of the philosophy of the process of aeration, it is reasonably inferred that a proper balance is required between the two functions of respiration and circulation, or, in other words, between the quantity of air respired, and that of the blood circulating through the lungs. It might further be inferred that, in a healthy condition of the organs, a definite ratio is observable between the frequency of the respiration and of the pulse. As a general rule, this ratio may be stated as *one to four and a half*—that is, in a healthy, well-formed adult, when the pulse is 70 in a minute, the number of respirations is about 15 or 16; while, if the pulse is naturally more or less than 70, there is a proportionate frequency of the respiration. So, in case of general febrile excitement, if the pulse is increased in frequency, a proportionate increase of the respiration is required to preserve a due balance between the two functions. In disease, however, it is very common that this balance between the functions is not preserved, and there are many variations in the ratio between the respiration and the pulse.

The object of this essay is to trace the diagnostic, pathological, and therapeutic indications of these variations.

That this subject has heretofore received little attention, is evident from the fact, that the few authors who have adverted to it, are not agreed even in regard to the natural ratio between the respiration and the pulse.

This ratio is stated by Haller to be as 1 to 3 or 4; by Dr. Graves, as 1 to 4. The number of respirations in a minute, in a healthy adult, is estimated by Magendie as 15; by Dr. Dunglison, about 18; by Sir Humphrey Davy, 26 or 27; while Dr. Good, Dr. C. J. B. Williams, and most other writers, give 20 as the ordinary number. Supposing the latter to be the true number, and the pulsations, as commonly estimated, to be 70 in a minute, the ratio will be 1 to 3½; while, according to the estimate of Sir Humphrey Davy, the ratio is about 1 to 2½.

This discrepancy of statement plainly shows, that the observations of authors on this point have been very limited. The only method which will lead to correct conclusions, a method which I have frequently practised since my attention was turned to this subject, is to count the respiration of persons who are unaware of such observation; for, as the respiration is much under the control of the will, its frequency will be varied by the operation of the mind. Hence, a conclusion drawn from observing one's own respiration would be liable to error. Perhaps di-

versity of climate, and national peculiarities of constitution, may occasion some variation from the ratio which I have stated; but so constant has been this ratio, of 1 to 4½, according to my observation, that I have regarded any considerable variation from it as a pretty sure indication of malformation or disease. In a diagnostic and pathological point of view, therefore, I regard the *comparative frequency* of the respiration and the pulse as highly important.

In early infancy there is less regularity in this ratio. Owing to imperfect development of the lungs, or some other cause, it is not uncommon that an infant, with a pulse of 120 or 130, will have 40, 50, or even 60 respirations in a minute. Generally, however, the healthy ratio becomes established in the course of the first or second year. So in adults, the respiration is rendered frequent by many circumstances which can hardly be considered as disease. Obesity, by preventing a free and large expansion of the chest, gives occasion to increased frequency of the respiration. The same effect is produced by a distension of the stomach or intestines, by pregnancy in females, and by any circumstance which prevents a free descent of the diaphragm. Any circumstance, indeed, that prevents a full quantity of air from being received into the lungs with each inspiration, necessarily calls for more frequent inspirations. As a general rule, if the respiration is deficient in fullness, the deficiency is compensated for by increased frequency.

DIAGNOSTIC INDICATIONS OF A DISPROPORTIONATE FREQUENCY OF THE RESPIRATION AND THE PULSE.

The general diagnostic indications afforded by variations of the ratio between the respiration and the pulse, may be reduced to two heads.

1st. A disproportionate *increased* frequency of the respiration indicates,

A. Disorder of the lungs or air passages.

B. Some mechanical impediment to the motions of respiration: or

C. Imperfect function of the organic nerves of the lungs.

2nd. A disproportionate *diminished* frequency of the respiration indicates a want of energy in the nerves which control the respiratory motions.

1st. A. *Frequent respiration from disorder of the lungs or air passages.*

It is obvious why disease of the lungs should occasion a disproportionate increased frequency of the respiration. If by engorgement, hepatization, tubercular deposition, or other disease, a portion of lung is rendered unfit for respiration, the remaining healthy portion, having the whole office of aeration to perform, must act with increased frequency in order to duly arterialize the blood. If, for instance, only one half of the lungs is fit for respiration, the frequency must be doubled. Thus, in acute diseases of the lungs, the ratio between the respiration and the pulse may be considered as some criterion of the *amount* of pulmonary obstruction. In asthenic cases, however, attended with a depression of nervous energy, as we shall hereafter notice, this criterion must be received with some allowance.

Frequent respiration in pneumonitis.—The relative frequency of

the respiration in pneumonitis is one of the most constant symptoms of the disease. As in other febrile diseases, the pulse is commonly frequent, but the increased frequency of the respiration is altogether disproportionate to that of the pulse. In cases of extensive engorgement, it is not uncommon that the respiration is 45 in a minute, when the pulse does not exceed 90; the ratio becoming as 1 to 2. In extreme cases, the respiration becomes even 60 or 70; and in children I have occasionally noticed it 140 or 150. In less degrees of engorgement, the ratio is as 1 to 3, 3½, or 4.

Commonly the pain in the chest, cough, and other symptoms, sufficiently indicate the general character of the disease. In some *latent* cases, however, these general symptoms are wanting; and there is scarcely a single symptom indicating pulmonary disease, except the comparative frequency of the respiration.

A single case is adduced, as an example of the importance of the ratio between the respiration and the pulse, as a diagnostic indication in such cases.

In March, 1832, I was one morning called to visit a vigorous young man, who had been attacked, the night previous, with chills, succeeded by considerable heat and febrile excitement. The skin was now cool, the tongue slightly furred—no pain or soreness in any part of the system, no disturbance of the stomach or bowels, no cough or expectoration, nor was the patient sensible of any difficulty of respiration. The pulse was 78, the respiration 30. This disparity between the pulse and the respiration was the only apparent general symptom of local disease—a symptom which probably would not have been noticed, but for my constant habit of attention to this point. The patient had not been subject to habitual shortness of breathing, and strict inquiry gained no clue to the existing disease. But the abnormal ratio between the respiration and the pulse (about 1 to 2½) warranted a suspicion of disease within the chest; and, on applying auscultation and percussion, it directly appeared that the lateral and posterior portions of the right lung were extensively engorged—in short, there was a *latent pneumonitis*, occupying a greater part of the right lung. A large blister was applied to the affected side, and calomel, elaterium, sanguinaria, and the other remedies which had proved serviceable in the pneumonitis of that season, were perseveringly administered. The disease continued day after day to run a perfectly latent course; and the nurse, a judicious elderly lady conversant with disease, was very distrustful of my diagnosis, saying that she had "always seen lung fever attended with pain in the chest, cough, difficulty of breathing and expectoration." At the commencement of the 6th day of the disease, I was called to my patient in the night. The nurse met me at the door, exclaiming, "now, doctor, I believe you—the man has lung fever." The symptoms at this time were a severe pain in the affected side, a labored, rattling respiration, and a copious bloody expectoration. The disease was now making a crisis, and the patient gradually convalesced. Whether this favorable result would have occurred is very doubtful, had not the treatment been directed by an early correct diagnosis.

We often hear of similar irregular cases of disease, which are described as "typhoid fever," or "general debility," which continue for 6 or 7 days, when a "pneumonia sets in" and carries off the patient. In such cases, attention to the comparative frequency of the respiration and the pulse would always lead to investigation for disease of the respiratory organs.

Frequent respiration in phthisis.—In the early stages of *phthisis*, this disparity between the respiration and the pulse may be regarded as one of the most valuable signs. It is not uncommon, in this disease, that considerable tubercular deposition in the lungs takes place, before the occurrence of cough, expectoration, and many other of the ordinary symptoms of the disease. Frequently, indeed, there are no prominent general symptoms, except, perhaps, a progressive debility and emaciation. With these symptoms, a disproportionate increased frequency of respiration affords a strong presumption of tubercular deposition. A simple general debility increases the frequency of respiration; but it occasions a proportionate increased frequency of the pulse—the ratio of 1 to 4½ is still preserved. Whereas, if the lungs are obstructed by tubercles, the respiration is out of proportion to the pulse.

In this disease the abnormal ratio between the respiration and the pulse is a more uncertain criterion of the *amount* of pulmonary obstruction than in *acute* diseases; for the scrofulous affection which produces the tubercular deposition in the lungs, at the same time impairs the processes of digestion and sanguification—hence, the quantity of blood in the system is much less than in health, the pulse is weak, and each contraction of the heart sends a small quantity of blood to the lungs; the quantity of blood to be aerated in the lungs is, therefore, less than natural, and a smaller quantity of air is required in respiration. In advanced stages of phthisis, there is so little blood in the system, that a very small proportion of healthy lung is sufficient for its arterialization, with only a moderate acceleration of the breathing. I have examined subjects who had died of this disease, in whom scarcely a tenth part of the lungs appeared to have been fit for respiration; when, a few days before death, with a pulse of 130 or 150, the respiration had not exceeded 35 or 40. Were the lungs obstructed to this degree in acute diseases, with a full quantity of blood in the system, an immeasurably increased frequency of respiration would be required to sustain life. But in the progress of a lingering case of phthisis, the quantity of blood in the system; the size of the aorta and other arteries, which are sometimes diminished in calibre nearly one half; and the feeble imperfect contractions of the heart, all become accommodated to the small remaining portion of healthy lungs.

I should here notice some incidental remarks in the clinical lectures of Dr. Graves, of the Meath Hospital, Dublin, which seem to be the result of imperfect observation. He remarks, "I have seen many cases of phthisis, in which there was accelerated breathing, with slow pulse, but these were always cases of a chronic kind. I have never observed the same phenomena existing when the disease was acute; it is a state of things which is compatible only with chronicity of disease."

In *acute* pulmonary disease, he says, when the respiration is considerably accelerated, there is "a corresponding increase in the frequency of the pulse." The very reverse of this is true. Certainly nothing is more common, in the early stage of acute pneumonitis, than to have the respiration 30, 40, or even 60 in a minute, when the pulse does not exceed 90. In acute œdematous inflammation of the lungs, I have often, within a few hours from the first attack, observed the respiration 70 or 80 in a minute—a mere panting—when the pulse scarcely exceeded its natural frequency. And in the early stages of phthisis, with a comparatively moderate tubercular obstruction of the lungs, I have commonly observed the disparity between the frequency of the respiration and the pulse greater than in the more advanced stages.

The observations and judgment of Dr. Graves are justly considered as high authority; but he has evidently given little attention to this subject; and he properly remarks, "I do not know any point on which accurate observations are more wanting, than on the proportion between the pulse and respiration in various states of the system, and in various diseases. Facts upon this subject might be easily collected, and would probably lead to curious and instructive results."

Frequent respiration in œdema of the lungs.—This disease is a very common cause of frequent respiration. Though the disease was noticed by Hippocrates, and has been more particularly described by Van Swieten, Darwin, Maclean, and others, most recent writers appear to be unaware of its common occurrence. Dr. Good barely notices it, as if doubting its occurrence. In treating of other dropsical affections within the chest, he says, "water is, *perhaps*, sometimes effused into the cellular texture of the lungs." Laennec says it is "rarely a primary and idiopathic disease. It comes on most commonly, with other dropsical affections in cachectic subjects, towards the fatal termination of long-continued fevers, or organic affections, especially those of the heart."

It appears to me that the question, in regard to this affection, is to be resolved into the general question, whether any dropsy is a primary and idiopathic disease. I am certain that no part of the system is so commonly the seat of dropsy as the lungs; and, in general anasarca, it is commonly in the lungs that the disease is first manifested. Even those authors who appear to doubt the existence of such an affection as idiopathic œdema of the lungs, generally mention disordered respiration as a symptom of general anasarca.

There are many cases which appear to be intermediate between a proper inflammation and a dropsy of the lungs—cases which might be termed œdematous inflammation. Such cases certainly have claim to the character of a primary and idiopathic disease. Of this character was the prevailing affection of the lungs in the influenza epidemic in New Haven, in the winter of 1831–32. In many cases of that disease, extreme frequency of the respiration, as compared with the pulse, constituted almost the only symptom of thoracic affection.

In cases of chlorosis, in most of the chronic disorders of menstruation, in general debility, and in cachectic diseases generally, swelling of the ankles and other symptoms of general anasarca commonly occur.

In almost all such cases I have found œdema in the lungs, before its manifestation in other parts of the system; and frequently the lungs are the only part in which it is to be observed. The affection can hardly fail to be injurious, by obstructing the lungs and interfering with a due aeration of the blood, and it is therefore very important to detect the disease in its early stages. Attention to the relative frequency of the respiration will afford suspicion of the disease; and a slight dullness observed on percussing the posterior portions of the chest, after the patient has been lying on the back; or the same observed about the inferior lobes of the lungs, after sitting or standing; with a dull respiratory sound corresponding to the dullness of percussion, will render the diagnosis almost certain. If any of the serum becomes infiltrated into the air cells and the minute bronchia, as frequently occurs, especially when the affection has anything of an inflammatory character, the stethoscope detects a sound like that produced by squeezing a wet sponge, by wringing wet clothes, or by the effervescence of fermenting liquors—a feebler and finer sound than the crepitation characteristic of proper inflammation.

Frequent respiration in various disorders of the lungs and air passages.—Besides the diseases already mentioned, any affection of the lungs, which prevents a portion of them from being freely permeated with air, necessarily occasions frequent respiration. Atrophy or emphysema of the lungs, congenital imperfection of the organs, solidification or any other lesion consequent to former disease, or pulmonary apoplexy, may produce this effect. A like effect is produced by disorders of the bronchia or bronchial membrane, as mucous or other obstructions within the bronchia impeding the passage of air, or any affection of the bronchial membrane preventing a communication between the air and the blood within the lungs.

B. *Frequent respiration from some mechanical impediment to the motions of respiration.*

Any disorder within the chest, exterior to the lungs, which affords a mechanical impediment to the expansion of the lungs, necessarily causes frequent respiration, as hydrothorax, pleuritic effusion, effusion into the pericardium, enlargement of the heart, aneurism of the aorta, or any tumor within the chest. The same effect is produced by ascites, flatulent distension of the stomach or intestines, or fullness of the abdomen from any other cause, operating to prevent a free descent of the diaphragm; hence a full meal occasions some acceleration of the breathing. Frequent respiration is caused also by any circumstance which renders a full inspiration painful, as rheumatism, or any inflammation of the intercostal or other muscles of respiration; or a like affection of the pleura, pericardium, heart, or any of the abdominal viscera. In peritoneal inflammation, the soreness and tumefaction of the abdomen render the respiration extremely short and frequent. Sometimes a debility of the respiratory muscles occasions the motions of respiration to be feeble, short, and frequent.

C. *Frequent respiration from imperfect function of the organic nerves of the lungs.*

In the function of respiration two important classes of nerves are chiefly concerned.

The *motions of respiration* are effected by that class which Sir Charles Bell terms *the respiratory system of nerves.* These nerves arise from the lateral portions of the medulla oblongata and upper part of the spinal marrow. The functions of these nerves, and, of course, the motions of respiration, are performed without the aid of the will; but, from a communication formed by some small nervous fibres between these nerves and the brain, the will acquires some control over the respiratory motions.

The other class of nerves, which is distributed to the lungs from *the sympathetic, ganglionic, or organic system of nerves,* is more immediately concerned *in effecting the aeration of blood.* A full quantity of air in the lungs is inadequate to effect this change, without the influence of this class of nerves. The motions of respiration, therefore, may be continued, through the influence of the former class of nerves, but if the organic or arterializing nerves cease to perform their office, the venous blood is returned unchanged to the left side of the heart, and thence transmitted to the system through the arteries. So if the function of these nerves is imperfect, the blood is in the same degree imperfectly arterialized.

These considerations reasonably explain how imperfect function of the organic nerves of the lungs occasions a relative frequency of respiration. Like organic disorders of the lungs, and the mechanical impediments to respiration, which have been adverted to, this nervous lesion operates to diminish the arterializing efficacy of each inspiration; and, consequently, a greater number of respirations is required.

The lesion of function of the organic respiratory nerves is considered, in this place, only as one of the causes of frequent respiration: the pathological effects of this lesion, in preventing a due arterialization of the blood, will be considered under our second general head, in connection with the subject of imperfect function of the motor respiratory nerves.

General diagnostic indication of increased frequency of respiration.

From the preceding considerations it may be inferred, that a disproportionate increased frequency of respiration does not indicate the particular disease which impedes the respiratory function. The impediment may be some disorder of the lungs or air passages, or some mechanical impediment to the motions of respiration, or an imperfect function of the organic nerves of the lungs. The frequency of breathing only affords the general indication, that there is some impediment to the respiration, the particular cause of which is to be investigated by attention to the symptoms, and by auscultation, percussion, and other means of exploration. Attention to this general indication will, in many cases, enable the practitioner successfully to adapt his remedies to local diseases, which might otherwise altogether elude observation, and lead to serious and even fatal results.

[To be continued.]

BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, MAY 16, 1838.

POSITIVE VALUE OF VACCINATION.

A CORRESPONDENT, of Philadelphia, intimates that it would be very satisfactory to know the "*real value of vaccine* inoculation, as at present conducted," intimating, at the same time, that the confidence of the public, both medical and general, in that quarter, is much impaired, and encouragement from elsewhere, if it could be had, would be very acceptable. Moreover, he remarks, that the fact would not be credited there, "*unless seen in a book*," that the health police regulations and prophylactic measures of Boston have kept the city free from smallpox. Whether the Philadelphia physicians believe it or not, it is nevertheless true, that under the management of the health department, Boston has been kept free from this formidable disease. The sick have heretofore been removed to a hospital, remote from the city, as soon as the character of the malady was understood. But these happy days of security are at an end here, unless more attention is given to vaccination than is at present anticipated. The old law, respecting removal, has been repealed, and smallpox, hereafter, may rage in Boston as it listeth. Strangers must remember to be vaccinated before visiting this metropolis. The next generation of Bostonians will be perfectly secure, as no children can enter the public schools without a certificate of vaccination. Nothing bears the impress of stability in this age. We were well off under the old regulations, but that was not satisfactory; we wanted to be better. The law which had protected our citizens, and the unsuspecting stranger who confided in it, was venerable by age; but it has been abolished—and now let each one look out for himself, for the pestilence that has no respect for unprotected persons, lurks in the streets. We are in the condition of the restless Italian, who had chiselled on his tomb-stone, "I was well, but I wanted to be better: I took physic, and here I am."

No less than sixty cases, varying in severity from mild varioloid to severe confluent smallpox, have occurred in the Philadelphia Penitentiary within the last three months.

Medical Schools.—At a public commencement of the University of Pennsylvania, held on Friday, April 6th, 1838, the degree of Doctor of Medicine was conferred on 144 gentlemen. At the commencement in July, 1837, the degree of M.D. was conferred on 13 gentlemen. Making together, 157.—The degree of M.D. was conferred on 24 gentlemen, at the public commencement of the Louisville Institute, in March.—The Medical College of the State of South Carolina had 141 students in attendance during the last session.

Hydrothorax.—Dr. Hiller has employed digitalis, with the extr. lactu. vir. in four cases of hydrothorax. In one he obtained a complete cure; in the three others, the patients were much relieved. Formula: extract of lettuce, gr. iv.; powder of digitalis, gr. i.; sugar, 1 drachm. A powder every two or three hours.

To Correspondents.—We must ask the indulgence of our correspondents for several weeks. For particular reasons, it is desirable to finish, as speedily as possible, the valuable essay by Dr. Hooker, which is commenced in this number. Among the communications which are in consequence deferred, and which may be still longer delayed, are those on "Medical Botany," the "Treatment of Ophthalmia," "Curvature of the Spine," "Retroversion of the Uterus," case of "Pseudo Labor," and the Circular of the Boston Medical School.—The first No. of the Louisville Medical Journal, to be published quarterly, is received.

Died,—At Girard, Penn., Dr. C. Rodgers, killed by the explosion of a cannon.—At Saratoga Springs, Dr. John Steel, resident physician at that place, aged about 58.—In Swanzey Village, Me., Dr. John Winslow, aged 72.—At Bridgewater, Vt., of consumption, Dr. Stephen D. Sears, aged 30.—At Bath, Me., Dr. J. Blesinski.

Whole number of deaths in Boston, for the week ending May 19, 98. Males, 16—Females, 12.
Consumption, 7—infantile, 2—dropsy on the brain, 1—inflammation of the lungs, 1—syphilis, 1—old age, 1—intussusception, 1—liver complaint, 1—child-bed, 1—typhus fever, 1—lung fever, 2—marasmus, 3—cancer, 1—croup, 1—disease of the heart, 1—erysipelas, 1—stillborn, 2.

THE BOSTON MEDICAL AND SURGICAL JOURNAL is published every Wednesday, by D. CLAPP, JR. at 184 Washington Street, corner of Franklin Street, to whom all communications must be addressed, *post-paid*. It is also published in Monthly Parts, each Part containing the weekly numbers of the preceding month, stitched in a cover. J. V. C. SMITH, M.D. Editor.—Price $3,00 a year in advance, $3.50 after three months, and $4,00 if not paid within the year.—Agents allowed every seventh copy *gratis*.—Orders from a distance must be accompanied by payment in advance, or satisfactory reference.—Postage the same as for a Newspaper.